Notice of Allowability	Application No.	Applicant(s)	
	10/003,684	KASHIMA ET AL.	
	Examiner	Art Unit	
	Narayanswamy Subramanian	3692	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *July 27, 2006*.

2. ☒ The allowed claim(s) is/are *1,5,13,17 and 25*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This communication is in response to Applicant's communications filed on July 27, 2006. Cancellation of claims 3, 4, 6, 15, 16 and 18 and amendments to claims 1, 5, 13, 17 and 25 have been entered. Claims 1, 5, 13, 17 and 25 are pending in this application.

Allowable Subject Matter

2. The following is a statement of reasons for the indication of allowable subject matter:

3. The prior art of record (Dietrich US Patent 2003/0018560) teaches a computer-implemented auction method, auction system and a computer-readable storage medium on which a program for holding an auction for each product type of multiple product types is stored, said program enabling computing resources for holding an auction for each product type of multiple product types including the steps of receiving bids from at least one computer or from multiple computers within a network of computers, for each product type of multiple product types in a transaction, that include minimum desired volumes and maximum desired volumes and evaluation prices for said each product type, wherein said each product type is a known configuration combining more than one product and generating a finite set of bids that include as an element said bids that were received.

Even though, the prior art of record teaches the above mentioned steps, the prior art of record fails to teach a computer-implemented auction method, auction system and a computer-readable storage medium on which a program for holding an auction for each product type of multiple product types is stored, said program enabling computing resources for holding an auction for each product type of multiple product types including the steps of employing dynamic programming to generate using said bids that were received in said receiving bids step,

a subset of bids wherein the maximum gain is obtained within a range represented by the count of said product available for sale, available for sale, wherein said dynamic programming including allocating a two-dimensional array V, representing a maximum gain and recursively solving the recursive equation for said two-dimensional array V, wherein

$$V(k, j) := \max \{V(k+l, j), V(k, j+l), \max\ lk<n<hk \{V(k+l, j+x)+ek(X)\}\}$$

is used as the recursive equation, where V(k, j) denotes said two-dimensional array V populated with said evaluation prices; where k represents the bid number and denotes an integer equal to or greater than 1 and equal to or smaller than n; j represents the number of the product and denotes an integer equal to or greater than 0 and equal to or smaller than s; n denotes the number of bids; s denotes the number of products available for the transaction; ek denotes the evaluation price when x units of products are purchased according to the bid bk; lk denotes the minimum volume of the bid bk; and hk denotes the maximum volume of the bid bk; and identifying or accepting a bid from said subset of bids, wherein a bid is selected by back tracking of said two-dimensional array V from the element on the smallest row and in the smallest column.

For these reasons claims 1, 13 and 25 are deemed to be allowable over the prior art of record.

The prior art of record (Dietrich US Patent 2003/0018560) teaches a computer implemented auction method and system for holding an auction for a product including the steps of receiving bids from at least one computer or from a network of computers that include minimum desired volumes and maximum desired volumes and evaluation prices for said product wherein said evaluation prices are represented as a non-linear function relative to the desired

volume of said product in said transaction and generating a finite set of bids that include as an element said bids that were received.

Even though, the prior art of record teaches the above-mentioned steps, the prior art of record fails to teach a computer implemented auction method and system for holding an auction for a product including the steps of employing dynamic programming using said computing resources to generate using said bids that were received in said receiving bids step, a subset of bids wherein a maximum gain is obtained within a range represented by a count of said product available for sale, wherein said dynamic programming includes allocating two-dimensional arrays V, representing a maximum gain, and Q representing a count of a product available, recursively solving recursive equations for said two-dimensional arrays V and Q, wherein

$$V(k,j) = v(k + 1,j)$$

$$V(k,j) = V(k,j+l)$$

$$V(k,j) = V(k,j + l)+ek \quad \text{if } lk < Q(k,j+1) < hk$$

$$V(k,j) = V(k + 1, j + lk) + eklk$$

$$Q(k,j) = Q(k,j + l) + 1 \text{ (if } V(k,j) = V(k,j + 1) + ek)$$

$$Q(k,j) = lk \text{ (if } (k,j) = V(k + 1, j + lk)+eklk$$

$$Q(k,j) = Q(k, j + 1) \text{ (if } V(k,j) = Vk, j + l)$$

$$Q(k,j) = 0 \text{ (otherwise)}$$

is employed as said recursive equation, where V(k, j) denotes said two-dimensional array V populated with said evaluation prices; where Q (k, j) denotes said two-dimensional array Q

populated with said count of said product available for sale; where k represents a bid number and denotes an integer equal to or greater than 1 and equal to or smaller than n; j represents the number of the product and denotes an integer equal to or greater than 0 and equal to or smaller than s; n denotes the number of bids; s denotes the number of products available for the transaction; ek denotes the evaluation price when x units of products are purchased according to the bid bk; lk denotes the minimum volume of the bid bk; and hk denotes the maximum volume of the bid bk, wherein a bid is selected by back tracking of said two-dimensional array V from the element on the smallest row and in the smallest column.

For these reasons claims 5 and 17 are deemed to be allowable over the prior art of record.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee, and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled Comments on Statement of Reasons for allowance.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Gujral et al. (US Pub. No. 2002/0042769 A1) (April 11, 2002) System and Method for Conducting Electronic Auctions with Multi-Parameter Optimal Bidding.

(b) Growney et al. (US Patent 7,062,460 B1) (June 13, 2006) On-Line Auction Method and System Facilitating the Sale of Multiple Product Units at Prices Varying with Volume.

(c) Yan et al. (US Pub. No. 2005/0137959 A1) (June 23, 2005) Simultaneous Optimal Auctions Using Augmented Lagrangian and Surrogate Optimization.

(d) Byde et al (US Pub. No. 2003/0233315 A1) (December 18, 2003) Bidding in Multiple On-Line Auctions.

(e) Sandholm (US Patent 6,272,473 B1) (August 7, 2001) Method, Apparatus, and Embodied Data Structures for Optimal Anytime Winner Determination in Combinatorial Auction-Type Problems.

(f) Tokunaga, Takuya (JP 2006172515 A) (June 29, 2006) Method for Adjusting Profit of Auction and Auction Device.

(g) Ogawa et al. (JP 2005122660 A) (May 12, 2005) Auction System and Auction Method.

(h) Yokoo et al. (JP 2004062387 A) (February 26, 2004) Method and Device for Network Auction of a Plurality of Goods, Network Auction Program and Recording Medium Recording the Program.

(i) Yokoo, Makoto "Secure Multi-Agent Dynamic Programming based Homomorphic Encryption and its Application to Combinatorial Auctions" CiteSeer, 2002

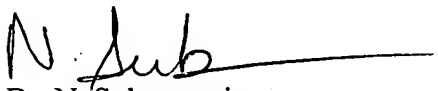
(j) Hattori et al. "A Dynamic Programming Model for determining Bidding Strategies in Sequential Auctions: Qasi-Linear Utility andBudget Constraints" from website: www.kecl.ntt.co.jp/csl/ccrg/members , Unknown date

(k) Byde, Andrew "An optimal Dynamic Programming Model for Algorithm Design in Simultaneous Auctions" Hewlett Packard Company, HPL-2001-67, March 30, 2001

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Narayanswamy Subramanian whose telephone number is (571) 272-6751. The examiner can normally be reached Monday-Thursday from 8:30 AM to

7:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Chilcot can be reached at (571) 272-6777. The fax number for Formal or Official faxes and Draft to the Patent Office is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PMR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dr. N. Subramanian
Primary Examiner

October 16, 2006